T E C H N I C A L M E M O R A N D U M

Utah Coal Regulatory Program

July 11, 2005

TO: Internal File

THRU: Karl R. Houskeeper, Environmental Scientist III, Team Lead

FROM: Dana Dean, P.E., Senior Reclamation Hydrologist

RE: Excess Spoil Disposal Area #2 Design Revision, Sunnyside Cogeneration Association, Sunnyside Refuse/Slurry, C/007/0035, Task ID #2223

SUMMARY:

Sunnyside Cogeneration Association (the Permittee) submitted plans to amend their Mining and Reclamation Plan (MRP) to include a second excess spoil disposal area. The Division received the application on April 18, 2005.

This technical memorandum discusses the hydrology related issues pertaining to the amendment.

The application meets the minimum requirements of the relevant hydrology regulations. The Division may approve it and incorporate it into the MRP.

TECHNICAL ANALYSIS:

OPERATION PLAN

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

General

The Permittee presents most of the required hydrologic information in Book 4, Section 700 of the MRP, and related Appendices and Plates. They present other hydrology related information in the following locations:

- Book 3, Sections 532 and 533 – Operational Design of Sediment Control Structures and Impoundments
- Book 3 Section 542.500 and 542.600– Reclamation of Sediment Ponds and Ditches; Roads, Culverts, and Bridges
- Book 3, Appendix 5-1 – Slope Stability Analysis of Sedimentation Ponds
- Book 3, Appendix 5-2 – Geotechnical Investigation of Slurry Impoundments
- Book 3, Appendix 6-2 – Evaluation of Water Rights
- Book 3, Appendix 6-5 – Drilling and Sample Collection and Monitoring Well Installation
- Book 5, Appendix 8-1 – Permit Term Reclamation Hydrology Plan
- Book 6, Section 9.10 – Water Treatment (diversions and sediment control)
- Book 6, Section 9.11.1 – Water Monitoring
- Book 7, Appendix 9-6 – Excess Spoil Disposal Area Design
- Book 7, Appendix 9-7 – Excess Spoil Area #2 Design
- Book 8, Section 10.5 – Final Reclamation Erosion Controls
- Book 8, Section 10.6 – Final Reclamation Drainage Control
- Book 8, Appendix 10-1 – Final Reclamation Hydrology Plan

The Permittee has met the requirements of R645-301-731 by presenting a plan that includes maps and descriptions, indicating how they will meet the relevant hydrology requirements. Their plan is specific to the local hydrologic conditions, and contains the steps the Permittee will take during coal mining and reclamation operations, through bond release, to:

- Minimize disturbance to the hydrologic balance within the permit and adjacent areas;
- Prevent material damage outside the permit area;
- Support approved post mining land use in accordance with the terms and conditions of the approved permit and performance standards of R645-301-750;
- Comply with the Clean Water Act (33 U.S.C. 1251 et seq.); and
- Meet applicable federal and Utah water quality laws and regulations.

The plan also includes the measures the Permittee will take to:

- Avoid acid or toxic drainage;
- Prevent, to the extent possible (using the best technology currently available), additional contributions of suspended solids to stream flows;
- Provide water treatment facilities when needed; and
- Control drainage.

The plan specifically addresses any potential adverse hydrologic consequences identified in the PHC, and includes preventative and remedial measures.

The Division has not required additional preventative, remedial or monitoring measures to assure that material damage to the hydrologic balance outside the permit area is prevented.

The following sections of this technical memo discuss the specific ways in which the Permittee has met the regulations, as they pertain to the amendment.

Acid- and Toxic-Forming Materials and Underground Development Waste

The Permittee has met the requirements of R643-301-731.300 by planning to prevent drainage from acid- and toxic-forming materials and underground development waste into surface water and ground water by:

- Identifying and burying materials which may adversely affect water quality, or be detrimental to vegetation or to public health and safety if not buried and/or treated; and
- Storing materials in a manner that will protect surface water and ground water by preventing erosion, the formation of polluted runoff and the infiltration of polluted water.
- Storage, and burial practices will be consistent with other material handling and disposal provisions of R645 Rules.

The Permittee discusses acid- and toxic-forming materials in Appendix 9-7, *ACID- and/or TOXIC-FORMING POTENTIAL OF WASTE*. Though previous tests of the material have shown no significant acid- and/or toxic-potential, the plans provide for testing the material (one grab sample per acre for each four-foot lift) once placed on the pile. The Permittee will provide test results to the Division on a quarterly basis.

The new excess spoil pile is located in a flat, incised area with no surface runoff, high groundwater, seeps, or springs. The Permittee will divert surface runoff from above the pile around it, and they do not plan to place any wet waste on the pile.

The Permittee will scatter any material found to be questionable, or acid- and/or toxic-forming within the pile, at least 10-feet from the outer slopes. The Permittee will place 4-feet of non-acid, non-toxic forming, noncombustible material over the top of the pile. When the pile is complete, the contours will be close to the original surface.

The outer slopes of the final pile configuration will be between 7 and 5 horizontal to 1 vertical. This, in addition to roughening and revegetating, will help to minimize erosion.

Diversions: General

The Permittee has met the requirements of R645-301-742.310-314 by diverting the flow from undisturbed areas from disturbed areas using permanent diversions. The Permittee designed the diversions to:

- Minimize adverse impacts to the hydrologic balance within the permit and adjacent areas;
- Prevent material damage outside the permit area; and
- Assure the safety of the public.

There are no underground mines in the permit area, and the Permittee does not plan to divert water into any underground mine.

The Permittee has also designed, located and will maintain each diversion structure to:

- Be stable;
- Provide protection against flooding and resultant damage to life and property; and
- Prevent additional contributions of suspended solids to stream flows outside the permit area.

The following sections of this technical memo discuss the specific ways in which the Permittee has met the regulations, as they pertain to the amendment.

Diversions: Miscellaneous Flows

The Permittee has met the requirements of R645-301-742.330 by diverting all flows from the undisturbed area above the new pile, around the pile. The Permittee designed the diversions to safely pass the runoff from a 100-year, 6-hour precipitation event.

The Permittee will divert flows that originate on the pile to the sedimentation ponds, before discharging into stream flow.

Findings:

The Permittee has met the minimum requirements of the Operation Plan, Hydrologic Information sections of the Regulations.

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

Analysis:

Mining Facilities Maps

The Permittee has met the requirements of R645-301-731.720 by depicting final contour drainage and diversions on Plate 9-8C.

Certification Requirements

The Permittee has met the requirements of R645-301-731.720 and 512.140 by having a professional engineer, registered in the state of Utah, certify Plate 9-8C.

Findings:

The Permittee has met the minimum requirements of the Operation Plan, Maps, Plans and Cross-Sections of Mining Operations sections of the Regulations.

RECOMMENDATIONS:

The amendment application meets the minimum requirements of the relevant hydrology regulations. The Division may approve it and incorporate it into the MRP.